



Application Serial No. 10/650,101  
Attorney Docket No. HES 2001-IP-005443U2

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

**TODD, ET AL.**

Serial No.: **10/650,101**

Filed: **August 26, 2003**

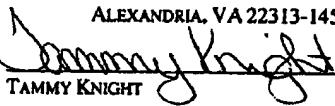
Title: **"COMPOSITIONS AND METHODS FOR  
REDUCING THE VISCOSITY OF A  
FLUID"**

§ Group Art Unit: **1712**

§ Examiner: **MARC S. ZIMMER**

§ Atty. Docket No: **HES 2001-IP-005443U2**

**MAIL STOP AMENDMENT**  
Honorable Commissioner of Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

<b>CERTIFICATE OF MAILING</b>	
ATTY. DOCKET NO.: <b>HES 2001-IP-005443U2</b>	
GROUP ART UNIT: <b>1712</b>	
EXAMINER: <b>MARC S. ZIMMER</b>	
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### AMENDMENT AND RESPONSE UNDER 37 C.F.R. §1.111 TO NON-FINAL OFFICE ACTION, MAILED NOVEMBER 16, 2004

Sir:

In response to the Office Action mailed on November 16, 2004 (the "Office Action"),  
please amend the above-identified application as follows:

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

1. (Original) A method of reducing the pH of a servicing fluid comprising the steps of:

providing a crosslinked, viscous servicing fluid comprising an acid-releasing degradable material;

allowing the acid-releasing degradable material to produce an acid; and  
allowing the servicing fluid's pH to reduce.

2. (Original) The method of claim 1 wherein the servicing fluid comprises a fracturing fluid or a gravel packing transport fluid.

3. (Original) The method of claim 1 wherein the servicing fluid is crosslinked with a crosslinker comprising boric acid, disodium octaborate tetrahydrate, sodium diborate and pentaborates, ulexite, colemanite, zirconium lactate, zirconium lactate triethanolamine, zirconium carbonate, zirconium acetylacetone, and zirconium diisopropylamine lactate, titanium ammonium lactate, titanium triethanolamine, titanium acetylacetone, aluminum citrate or aluminum lactate.

4. (Original) The method of claim 1 wherein the servicing fluid de-crosslinks when its pH is lowered below about 9.

5. (Original) The method of claim 1 wherein the acid-releasing degradable material comprises a lactide, poly (lactic acid) or a blend thereof.

6. (Original) The method of claim 1 wherein the acid-releasing degradable material comprises a lactide, a poly(lactide); a glycolide; a poly(glycolide); a substantially water insoluble anhydride; a poly(anhydride), a substituted poly (lactide) wherein the substituent is selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl, acetyl, heteratoms and mixtures thereof or a combination thereof.

7. (Original) The method of claim 1 wherein the acid-releasing degradable material further comprises a solvent.

8. (Original) The method of claim 7 wherein the solvent is acetone, propylene carbonate, dipropylglycolmethylether, methylene chloride, isopropyl alcohol, or combinations thereof.

9. (Original) A method of fracturing a subterranean formation comprising the steps of

providing a crosslinked, viscous fracturing fluid comprising an acid-releasing degradable material;

placing the fracturing fluid into a subterranean formation at a pressure sufficient to create at least one fracture;

allowing the acid-releasing degradable material to produce an acid;

allowing the pH and viscosity of the fracturing fluid to reduce.

10. (Original) The method of claim 9 wherein the fracturing fluid is crosslinked with a crosslinker comprising boric acid, disodium octaborate tetrahydrate, sodium diborate and pentaborates, ulexite, colemanite, zirconium lactate, zirconium lactate triethanolamine, zirconium carbonate, zirconium acetylacetone, and zirconium diisopropylamine lactate, titanium ammonium lactate, titanium triethanolamine, titanium acetylacetone, aluminum citrate or aluminum lactate.

11. (Original) The method of claim 9 wherein the fracturing fluid de-crosslinks when its pH is lowered below about 9.

12. (Original) The method of claim 9 wherein the acid-releasing degradable material comprises a lactide, poly (lactic acid) or a blend thereof.

13. (Original) The method of claim 9 wherein the acid-releasing degradable material comprises a lactide, a poly(lactide); a glycolide; a poly(glycolide); a substantially water insoluble anhydride; a poly(anhydride), a substituted poly (lactide) wherein the substituent is selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl, acetyl, heteratoms and mixtures thereof or a combination thereof.

14. (Original) The method of claim 9 wherein the acid-releasing degradable material further comprises a solvent.

15. (Original) The method of claim 14 wherein the solvent is acetone, propylene carbonate, dipropylglycolmethylether, methylene chloride, isopropyl alcohol, or combinations thereof.

16. (Original) A method of creating a gravel pack in a well bore comprising the steps of

providing a crosslinked, viscous gravel transport fluid comprising gravel and an acid-releasing degradable material;

placing the gravel transport fluid into a portion of a well bore so as to create a gravel pack;

allowing the acid-releasing degradable material to produce an acid;

allowing the pH and viscosity of the gravel transport fluid to reduce.

17. (Original) The method of claim 16 wherein the gravel transport fluid is crosslinked with a crosslinker comprising boric acid, disodium octaborate tetrahydrate, sodium diborate and pentaborates, ulexite, colemanite, zirconium lactate, zirconium lactate triethanolamine, zirconium carbonate, zirconium acetylacetone, and zirconium diisoproplyamine lactate, titanium ammonium lactate, titanium triethanolamine, titanium acetylacetone, aluminum citrate or aluminum lactate.

18. (Original) The method of claim 16 wherein the gravel transport fluid de-crosslinks when its pH is lowered below about 9.

19. (Original) The method of claim 16 wherein the acid-releasing degradable material comprises a lactide, poly (lactic acid) or a blend thereof.

20. (Original) The method of claim 16 wherein the acid-releasing degradable material comprises a lactide, a poly(lactide); a glycolide; a poly(glycolide); a substantially water insoluble anhydride; a poly(anhydride), a substituted poly (lactide) wherein the substituent is selected from the group consisting of hydrogen, alkyl, aryl, alkylaryl, acetyl, heteratoms and mixtures thereof or a combination thereof.

21. (Original) The method of claim 16 wherein the acid-releasing degradable material further comprises a solvent.

22. (Original) The method of claim 21 wherein the solvent is acetone, propylene carbonate, dipropylglycolmethylether, methylene chloride, isopropyl alcohol, or combinations thereof.

23.-26. (Cancelled)

27. (Currently Amended) A servicing fluid composition comprising a crosslinked, viscous fluid and an acid-releasing degradable material ~~The method of claim 23~~ wherein the acid-releasing degradable material comprises a lactide, poly (lactic acid) or a blend thereof.

28.-29. (Cancelled)

30. A servicing fluid composition comprising a crosslinked, viscous fluid, an acid-releasing degradable material, and a solvent ~~and The method of claim 29~~ wherein the solvent comprises is—acetone, propylene carbonate, dipropylglycolmethylether, methylene chloride, isopropyl alcohol, or a combinations thereof

## REMARKS

### I. General Remarks

Please reconsider the application in view the following remarks. Applicants thank the Examiner for carefully considering this application.

### II. Disposition of Claims

Claims 1-22, 27, and 30 are pending in this application. Claims 23-26 and claims 28-29 are hereby cancelled; no amendment to inventorship is necessitated by this cancellation. Claims 1, 9, 16, 27, and 30 are independent and all remaining claims depend, either directly or indirectly, from one of those claims.

### III. Rejection of Claims under 35 U.S.C. § 102

#### A. Rejections under *Smith*.

Pending claims 1-2, 4, 9, 11, 16, and 18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,224,546 to *Smith et al.* ("Smith"), this rejection is respectfully traversed.

To form a basis for a § 102(b) rejection, a prior art reference must disclose each and every element as set forth in the claim. *See* MANUAL OF PATENT EXAMINING PROCEDURE § 2131 (2004). However, *Smith* does not disclose the methods as recited by independent claims 1, 9, and 16. Specifically, *Smith* does not disclose the step of allowing the servicing fluid's pH to reduce. As the Examiner notes, the methods of reducing the viscosity of a fluid disclosed in *Smith* involve (1) the degradation of polymer chains in the fluid by an acid, and (2) the removal of the metal ion from a crosslinked polymer by a metal-ion chelator. *See Smith* at col. 1, lines 64-68, col. 2, lines 1-2. Neither of these methods discloses a reduction of the pH of the fluid. Although the Examiner asserts that "the acid generated from the decomposable materials will, of course, have a lowering effect on the pH of the system," this is not necessarily the case since *Smith* also discloses the use of a pH adjusting material that could counteract any reduction of the pH of the system by the acid produced. *See* Office Action at ¶ 2; *Smith* at col. 3, line 59-68, col. 4, lines 1-3.

In view of the above, *Smith* fails to disclose all of the elements in independent claims 1, 9, and 16; thus, independent claims 1, 9, and 16 are patentable over *Smith*. Moreover, since "a claim in dependent form shall be construed to incorporate by reference all the

limitations of the claim to which it refers," and since dependent claims 2, 4, 11, and 18 depend, either directly or indirectly, from one of claims 1, 9, or 16, these dependent claims are allowable for at least the same reasons. *See* 35 U.S.C. § 112 ¶ 4 (2004). Accordingly, withdrawal of this rejection is respectfully requested.

**B. Rejections under *Dawson*.**

Pending claims 1-4, 7, 9-11, 14, and 16-18 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,793,018 to *Dawson et al.* ("*Dawson*"), this rejection is respectfully traversed.

To form a basis for a § 102(e) rejection, the prior art reference must disclose each and every element as set forth in the claim. *See* MANUAL OF PATENT EXAMINING PROCEDURE § 2131 (2004). However, *Dawson* does not disclose the methods as recited by claims 1, 9, and 16. Specifically, like *Smith*, *Dawson* does not disclose the step of allowing the servicing fluid's pH to reduce. *Dawson* fails to disclose any effect of the methods disclosed therein on the pH of a fluid. Nor does *Dawson* disclose any method of acid production that might effect a reduction in the pH of the fluid.

In view of the above, *Dawson* fails to disclose all of the elements in independent claims 1, 9, and 16; thus, independent claims 1, 9, and 16 are patentable over *Smith*. Moreover, since "a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers," and since dependent claims 2-4, 7, 10-11, 14 and 17-18 depend, either directly or indirectly, from one of claims 1, 9, or 16, these dependent claims are allowable for at least the same reasons. *See* 35 U.S.C. § 112 ¶ 4 (2004). Accordingly, withdrawal of this rejection is respectfully requested.

**C. *Harris* does not disclose the present invention as claimed.**

Pending claims 1-4, and 9-11 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,813,466 to *Harris et al.* ("*Harris*"), this rejection is respectfully traversed.

As previously indicated, to form a basis for a § 102(b) rejection, a prior art reference must disclose each and every element as set forth in the claim. However, *Harris* does not disclose the methods as recited by claims 1, 9, and 16. *Harris* does disclose the use of a

"substrate which is capable of being converted by [an] enzyme into an organic acid"; however, *Harris* does not disclose the use of this acid-releasing substrate without the need for an enzyme to catalyze the reaction. In contrast, the acid releasing material in the methods of the present application may, *inter alia*, act alone to reduce the pH of the servicing fluid that comprises it. Therefore, any methods disclosed in *Harris* that might reduce the pH of a fluid are fundamentally different from those claimed in the present application because they require the use of an enzyme (in addition to the substrate that actually releases the acid) to perform the step of reducing the pH of the fluid.

In view of the above *Harris* fails to disclose all of the elements in independent claims 1 and 9; thus, claims 1 and 9 are patentable over *Harris*. Moreover, since "a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers," and since dependent claims 2-4 and 10-11 depend, either directly or indirectly, from one of claims 1 or 9, these dependent claims are allowable for at least the same reasons. *See* 35 U.S.C. § 112 ¶ 4 (2004). Accordingly, withdrawal of this rejection is respectfully requested.

#### IV. Objections to Claims

Pending claims 5-6, 8, 12-13, 15, 19-20, 22, 27, and 30 are objected to as being dependent upon rejected base claims. Pending claims 5-6, 8, 12-13, 15, 19-20 and 22 each depend, either directly or indirectly, from one of claims 1, 9, or 16. As the rejections of claims 1, 9, and 16 have been traversed herein, withdrawal of the objections to dependent claims 5-6, 8, 12-13, 15, 19-20 and 22 is respectfully requested. Claims 27 and 30 have been rewritten in independent form to include all the limitations of the base claim and all intervening claims; hence, withdrawal of the objection to claims 27 and 30 is respectfully requested.

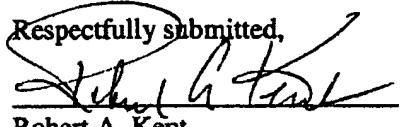
#### SUMMARY

In light of the above remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections and objections. Applicants further submit that the application is now in condition for allowance, and earnestly solicit timely notice of the same. Should the Examiner have any questions, comments or suggestions in furtherance of the

prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile, or electronic mail.

Applicants hereby authorize the Commissioner to charge \$200 as a fee for an additional independent claim over those filed with the original application to Deposit Account No. 08-0300 (Reference Number HES 2001-IP-005443U2). Should the Commissioner deem that any additional fees are due, including any fees for extensions of time, Applicants respectfully request that the Commissioner accept this as a petition therefore, and direct that any additional fees be charged to Deposit Account No. 08-0300 (Reference Number HES 2001-IP-005443U2).

Respectfully submitted,

  
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**ATTORNEY FOR APPLICANTS**

Date: February 4, 2005

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